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Mapping vulnerability to climate change and its repercussions on human health in Pakistan

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Abstract:

BACKGROUND: Pakistan is highly vulnerable to climate change due to its geographic location, high dependence on agriculture and water resources, low adaptive capacity of its people, and weak system of emergency preparedness. This paper is the first ever attempt to rank the agro-ecological zones in Pakistan according to their vulnerability to climate change and to identify the potential health repercussions of each manifestation of climate change in the context of Pakistan. METHODS: A climate change vulnerability index is constructed as an un-weighted average of three sub-indices measuring (a) the ecological exposure of each region to climate change, (b) sensitivity of the population to climate change and (c) the adaptive capacity of the population inhabiting a particular region. The regions are ranked according to the value of this index and its components. Since health is one of the most important dimensions of human wellbeing, this paper also identifies the potential health repercussions of each manifestations of climate change and links it with the key manifestations of climate change in the context of Pakistan. RESULTS: The results indicate that Balochistan is the most vulnerable region with high sensitivity and low adaptive capacity followed by low-intensity Punjab (mostly consisting of South Punjab) and Cotton/Wheat Sindh. The health risks that each of these regions face depend upon the type of threat that they face from climate change. Greater incidence of flooding, which may occur due to climate variability, poses the risk of diarrhoea and gastroenteritis; skin and eye Infections; acute respiratory infections; and malaria. Exposure to drought poses the potential health risks in the form of food insecurity and malnutrition; anaemia; night blindness; and scurvy. Increases in temperature pose health risks of heat stroke; malaria; dengue; respiratory diseases; and cardiovascular diseases. CONCLUSION: The study concludes that geographical zones that are more exposed to climate change in ecological and geographic terms- such as Balochistan, Low-Intensity Punjab, and Cotton-Wheat Sindh -also happen to be the most deprived regions in Pakistan in terms of socio-economic indicators, suggesting that the government needs to direct its efforts to the socio-economic uplift of these lagging regions to reduce their vulnerability to the adverse effects of climate change.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3477077

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security, Temperature

Extreme Weather Event: Drought, Flooding

Food/Water Security: Food Access/Distribution

Temperature: Extreme Heat

Geographic Feature: ☑

resource focuses on specific type of geography

Mountain, Ocean/Coastal, Rural

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Pakistan

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease, Neurological Effect, Respiratory Effect, Other Health Impact

Infectious Disease: General Infectious Disease, Vectorborne Disease

Foodborne/Waterborne Disease: Other Diarrheal Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue, Malaria

Other Health Impact: Anemia;Blindness

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Socioeconomic Scenario: Other Socioeconomic Scenario

Other Socioeconomic Scenario: Adaptive Capacity

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content